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How much do clinicians support patient self-management? The development of a measure to assess clinician self-management support ☆

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ABSTRACT

Background: Primary care provider (PCP) support of patient self-management may be important mechanism to improving patient health outcomes. In this paper we develop a PCP-reported measure of clinician strategies for supporting patient self-management, and we psychometrically test and validate the measure.

Methods: We developed survey items based upon effective self-management support strategies identified in a prior mixed methods study. We fielded a survey in the fall of 2014 with 139 Fairview Health Services PCPs, and conducted exploratory factor analysis and Cronbach's Alpha to test for scale reliability. To validate the measure, we examined the Self-Management Support (SMS) scale's relationship to survey items on self-management support, as well as clinicians' patient panel rates of smoking cessation and weight loss.

Results: Nine survey items clustered reliably to create a single factor (Cronbach's Alpha=0.73). SMS scores ranged from 2.1 to 4.9. The SMS was related to each of the validation variables. PCPs who reported spending 60% percent or more of their time counseling, educating, and coaching patients had a mean SMS score of 4.0, while those who reported spending less than 30% of their time doing so had mean SMS scores 15% lower. PCPs' SMS scores exhibited significant but modest associations with their patients' smoking cessation and weight loss (among obese patients) (r=0.21 and r=0.13 respectively).

Conclusions: This study develops and tests a promising measure of PCPs' strategies to support patient self-management. It highlights variation across PCPs. Future work should examine whether increasing scores of PCPs low on the SMS improves chronic care quality outcomes.

1. Introduction

Recent policies to improve quality of care, such as public reporting of quality performance and pay-for-performance, are increasing clinicians' accountability for their patients' health outcomes.[1–4] These policies assume that by paying for quality or making quality performance public, clinicians will focus more on improving their patients' health outcomes. However, patients themselves contribute substantially to their own health outcomes.[5–9] Patient behaviors, including adherence to treatment regimens, self-management of chronic conditions, and making recommended lifestyle behavior changes, are important determinants of many of the quality indicators that clinicians are being held accountable for. Not surprisingly, clinicians working under pay-for-performance programs often express frustration that their patients' lifestyle behaviors impact their incomes.[1,10]

Given patients' important role in influencing their own health, an important mechanism for clinicians seeking to improve patient health outcomes is providing self-management support to their patients.[11–14] Yet, providing this support is a relatively new role for many clinicians, and one that many report having little training in.[14–17] For example, a recent study of primary care clinicians (PCPs) within a Pioneer Accountable Care Organization found that when asked about key obstacles to improving their quality metrics, one-quarter cited not knowing how to effectively support patients in behavior change.[10]

There are measures of effective clinician support of patient self-management, however, they rely upon patient assessment of the care.[18–21] Patient assessments of clinician support and interactions have been shown to be affected by a number of patient-level factors such as activation level, attachment style, and socio-

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economic status.[22–25] As far as we are aware, there is no evidence-based measure that assesses provider reported self-management support strategies.

In this paper we report on the development of a primary care provider (PCP)-reported measure of the use of patient self-management support strategies that have been identified as effective in a prior mixed-method study. We test the psychometric properties of the new measure, and examine how it relates to other PCP behaviors that are supportive of patient self-management, attitudes towards supporting patients in self-management, and whether it is predictive of key patient health behavior change.

2. Background

This paper builds on prior mixed methods research that employed the positive deviance approach to identify effective clinician strategies for supporting patient behavior change.[26] This methodology is used to identify the effective strategies used by top performers–or "positive deviants" on established performance measures.[27] The underlying assumption is that there are existing effective strategies being used, in this case by clinicians for supporting patient behavior change, and the goal of the research is to reveal the existing effective strategies. The method was developed in the global health arena, and it is increasingly being used for quality improvement related-research in the United States.[27–30]

The positive deviance process involves several steps. Initially quantitative data is used to identify top performers on specific performance measures and often on a comparator group of average or low performers. In our prior work, we identified PCPs within Fairview Health Services, a Pioneer Accountable Care Organization with over 280 PCPs in Minnesota, whose patients' activation scores increased over time and compared them to a group of PCPs whose patients' PAM scores increased not at all or increased very little. We measured patient activation, which is defined as having the knowledge, skills, confidence, and motivation to manage one's health and health care, using the Patient Activation Measure or PAM.[31,32]

The second step of the positive deviance process was to conduct in-depth interviews with a group of PCPs whose patients' change in activation was comparatively high (n=10) and with a group whose change was comparatively low (n=10). The goal of

Table 1.
Sample demographics and associations between demographic characteristics and the SMS measure.

	Percent of survey respondents (n=139)	SMS score (mean)	p-Value
PCP type			0.2668
Family medicine physician	56.8	3.7	
Internist or internist/pediatrician	16.6	3.7	
Nurse practitioner or physician assistant	26.6	3.9	
Gender			0.0151
Male	36.0	3.6	
Female	64.0	3.8	
Age group			0.3320
<35	13.0	3.8	
35–49	51.5	3.8	
50–59	20.3	3.7	
60+	15.2	3.6	
Length of time at fairview			0.5343
<1 Year	6.0	3.8	
1–5 years	38.8	3.8	
6–10 years	21.6	3.8	
11+ years	33.6	3.7	
Panel income tercile[a]			0.6187
Lower tercile	33.3	3.7	
Middle tercile	31.6	3.7	
Higher tercile	35.1	3.8	

[a] n=116.

Table 2.
Factor loadings for the PPI items in the single factor solution.

Key themes from prior qualitative research	Survey items	Loading
Emphasizing patient ownership	Tell the patient you will be their "coach" but that they are the one that has to carry out the plan	0.45*
Partnering with patients	Ask the patient what change s/he wants to focus on	0.57*
Identifying small steps for change	Work with the patient to jointly set very specific behavioral goals (e.g. walk up two flights of stairs or around the block daily)	0.73*
	Try not to overwhelm the patient with too many recommended changes	0.72*
	Challenge patients to try to take one small step toward a change	0.69*
Having frequent follow-up	Have patients come back frequently to check on progress towards behavioral goals	0.47*
	Celebrate with the patient when he/she makes even small behavioral improvements	0.52*
	Brainstorm with the patient on how to overcome the problems holding them back	0.39*
Showing patients care and concern	Tell the patient how much you care about him/her and his/her health	0.70*

* $p < 0.05$.

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conducting these interviews was to develop hypotheses about the distinctive strategies the high performers use to support patient behavior change.

Through qualitative analysis of the transcribed interviews, we identified five key strategies that high PAM change PCPs reported frequently using and that low PAM change PCPs used far less frequently. The strategies were: emphasizing patient ownership of their health; partnering with patients; identifying small steps for change; having frequent follow-up to cheer successes and problem solve challenges; and showing patients care and concern.[26]

The next step in the positive deviance approach, which is the purpose of this paper, is to test the hypotheses from the qualitative analysis in a larger sample. Thus the goal of this paper is to operationalize the themes into survey items, conduct a survey of Fairview PCPs with the new items, psychometrically test whether the items form a scale, and conduct validity testing of the new scale.

3. Methods

Based upon the 5 key strategies described above, we developed 9 survey items that asked PCPs how frequently in the last month they did specific actions with their patients who have chronic conditions (on a 1–5 scale in which 1 corresponded with "never" and 5 "very often"). For each theme, we examined the coded qualitative data in order to develop exemplary items. For instance, to assess the strategy of emphasizing patient ownership of their health, there were a number of quotes from PCPs like: "I'm your coach, but you ultimately have to perform, not me." The corresponding item we developed was "How often did you tell a patient you will be their 'coach' but that he/she is the one that has to carry out the plan? " For the strategy of partnering with patients, PCPs described asking patients what they want to change, like saying, "What one thing do you want to change? " The item we developed to capture this theme was: "How often did you ask the patient what change he/she wants to focus on? " A full list of the items can be found in Table 2.

In the fall of 2014, the questionnaire was distributed by email to 289 Fairview PCPs. It was completed by 139 PCPs resulting in a response rate of 48%. As is described below, we conducted exploratory factor analysis (EFA) to test whether the items form one or more scales. Then, to test the construct validity of the scale, we performed analyses using both clinician survey data and patient behavior change data extracted from the electronic health record.

3.1. Psychometric testing

We performed an exploratory factor analysis (EFA) in MPlus to create the measure of clinician Self-Management Support (SMS). EFA is a method designed to identify underlying latent constructs from a collection of observed variables.[33] Unlike a typical EFA, the structural equation modeling approach allows for non-normality of variables that compose factors and for correlated residuals. This was particularly important for this study as the variables used to construct the scale were ordinal.

We tested for 1, 2, and 3 factor solutions for the model. All analyses made use of Geomin rotated loadings, yielding oblique factors. Due to the ordinal nature of the variables, standard errors were estimated using Weighted Least Squares with mean and variance, a robust estimator which does not assume normally distributed variables.[34]

Fit statistics were found for each of the three potential factor analysis models, and the single factor model was found to be the best fit (not shown). This model represents a reasonably well-fitted factor with a relatively low Root Mean Square Error of Approximation (RMSEA) of 0.07 and a relatively high Comparative Fit Index (CFI) of 0.976. Using Stata, we also tested the reliability or internal consistency of the items using Cronbach's alpha.

3.2. Construct validity

To test the construct validity of the new SMS measure, we examined its relationship to several items from the clinician survey related to supporting patients in self-management and data from the electronic health record on behavior change among PCPs' patients.

Three survey items related to providing counseling, education, and coaching to patients. The first was a PCP report of the estimated amount of time spent counseling, educating, and coaching patients with chronic conditions during office visits (29% or less, 30–44%, 45–59%, 60% or more). The second was the amount of effort PCPs planned to put into providing support and counseling to patients in order to increase patient activation and improve self-management in the next twelve months (none, small amount, moderate amount, or large amount). PCPs' confidence in their ability to support effective behavior change in patients (slightly confident, moderately confident, or very confident) was also examined.

We also examined the relationship between the SMS and the Clinician Support for the Patient Activation Measure (CS-PAM), a scale that measures clinicians' attitudes and beliefs about the importance of different aspects of the patient role. Earlier research shows that the CS-PAM is correlated with many collaborative behaviors with patients reported by clinicians.[35]

Finally, we examined the relationship between the SMS and two key patient behavior change variables: change in body mass index (BMI) from obese to not obese and quitting smoking. In this analysis we used longitudinal patient data to observe behavior change among patients. We used 2012 patient data on Fairview patients with a PAM who were either obese or smoking and had follow-up data from 2014 so we could assess behavior change. Specifically, we examined those 14,761 patients in 2012 who whose BMIs were categorized as obese (30 or higher), and identified the percentage whose BMI dropped to under 30 in 2014. Similarly, we examined the 6021 patients in 2012 who were smokers to identify the percentage who quit by 2014. For the two behavior change variables, we aggregated the rates of healthy behavior change to the PCP-level, including all PCPs with at least 30 patients in the denominator.

We used one-way ANOVA to examine whether mean scores on the SMS differed between various levels of the survey validation variables. Pearson's correlations were performed to associate the SMS with the patient behavior change variables.

4. Results

Table 1 shows survey respondents were disproportionately female (65%) and family practitioners (57%), which is consistent with the population of Fairview PCPs[2]. Over half of respondents (52%) were 35–49 years old, and over half (55%) had worked at Fairview for over five years.

Table 2 shows the results of the exploratory factor analysis. We observe that all of the factor loadings are significantly different from zero at conventional levels of significance. This, along with a Cronbach's Alpha of 0.73 indicates that the nine factor variables cluster reliably to create a single factor solution. The variables concerning PCPs telling their patients that they would be their coach, working jointly with patients to set behavioral goals, telling patients how much they cared about their wellbeing, and trying not to overwhelm patients with too many behavioral changes at

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Table 3.
Associations between the SMS and validation variables.

	Percent of respondents (n=139)	SMS score (mean)	p-Value
Percent of time spent counseling, educating, and coaching patients with chronic conditions during office visits with established patients			<0.0001
29% or less	28.2	3.4	
30–44%	22.8	3.8	
45–59%	26.9	3.8	
60% or more	22.2	4.0	
Amount of focus in the next 12 months on providing support and counseling to patients in order to increase patient activation and improve self-management			0.0001
None/small amount	23.0	3.5	
Moderate amount	33.8	3.7	
Large amount	43.2	4.0	
Confidence in effectively helping patients make necessary behavior changes to improve their health (e.g. increasing exercise or quitting smoking)			<0.0001
Slightly confident	25.3	3.5	
Moderately confident	40.7	3.7	
Confident/very confident	34.0	4.0	
CS-PAM tercile			<0.0001
Lowest tercile	36.7	3.5	
Middle tercile	32.0	3.8	
Highest tercile	31.3	3.9	

once were the most substantial contributors to the factor with loadings greater than 0.7 indicating strong contributions to the factor solution.[36]

PCPs' SMS scores ranged from a low of 2.1 to a high of 4.9, with a median score of 3.8 and a standard deviation of 0.5. With one exception, SMS scores were not significantly related to PCPs' socio-demographic characteristics or their patient panel's income level (Table 1). Female PCPs, though, had significantly higher SMS scores than did male PCPs (3.8 vs 3.6).

We also observed substantial variation across PCPs on the self-management support validation variables (Table 3). PCPs ranged widely, for example, in their confidence in helping patients make behavior change. While 34% reported being "confident" or "very confident", 41% said they were "moderately confident" and 25% only "slightly confident". There was also a wide range on the amount of time they reported currently spending counseling, educating and coaching patients during office visits. Over a quarter (28%) reported spending less than 30% of their time doing so, and almost as many (22%) said they spent at least 60% of their time doing so.

The SMS measure was strongly related to each of the survey validation variables (Table 3). For example, PCPs who reported spending 60% or more of their time counseling, educating, and coaching patients had a mean SMS score of 4.0. Those who reported spending less than 30% of their time doing so had mean SMS scores 15% lower (3.4). Similarly, those who reported being confident or very confident in helping patients make behavior changes had mean SMS scores 12.5% higher than those who reported slight confidence (4.0 vs 3.5). We also observed that CS-PAM scores were positively associated with scores on the SMS.

Finally, we found that PCPs' SMS scores exhibited significant but modest associations with their patients' behavior change (not shown). PCPs' SMS score was significantly correlated with their-patients' quitting smoking ($r=0.21$, $p<0.01$). The PCPs' SMS score was also significantly correlated with their obese patients' decreasing body mass index to below 30 ($r=0.13$, $p<0.01$).

5. Discussion

In this study we developed and tested a measure of clinician support for patient self-management. The clinician Self-Management Support strategies measure, or SMS, was found to form a cohesive scale, with the items forming a uni-dimensional measure with good reliability scores both in both exploratory factor analysis and with classical test theory.

The new SMS measure was positively related with higher scores on the CS-PAM, and with reports of greater attention, effort, and confidence in supporting patient self-management and behavior change. Further, the measure appears to be related to PCPs' patients behavior change. That is, PCPs who score high on the SMS were more likely to have patients who were able to successfully make difficult behavior changes, including losing weight and quitting smoking. These findings, while not proving causality, do suggest that these behaviors and strategies reflected in the SMS measure are related to behavior change in patients.

The results also highlight that there is a great deal of variation among PCPs in terms of the patient self-management support strategies measured in the SMS. Scores on the SMS in this one innovative delivery system ranged from 2.1 to 4.9. This variation may be an important source of variation in quality outcomes: a source that has largely gone undetected and unaddressed in quality efforts. That is, PCPs who lack the skills and commitment to support patient self-management and patient behavior change may have more difficulty in achieving the same level of quality outcomes that a PCP who is more adept in these areas.

As more delivery systems are assuming greater responsibility for both costs and quality outcomes, clinician performance has become a key focus. However, there is been relatively little attention to clinician performance as it relates to supporting behavior change or patient self-management, despite patient behaviors contributing to their health outcomes. The results from this study suggest that key clinician behaviors and strategies can make a difference in patient behavior change, and that in turn can influence quality outcomes. Further the results highlight specific strategies that clinicians can adopt that appear to facilitate improved patient outcomes.

These research findings should be interpreted in light of the study's limitations. The study focused exclusively on the strategies PCPs use to support patient self-management, while many other members of health care teams may play important roles in working with patients on self-management. Future studies should examine the effective strategies used by other team members. Additionally, the study was conducted in one innovative delivery system in Minnesota, a state known for a focus on quality of care.

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Therefore the PCPs' scores on the SMS are likely not representative of PCPs across the country. However, the fact that there is such variation in SMS scores in this delivery system is suggestive of even wider variation elsewhere. Future research should replicate this study in a larger, more representative sample of clinicians, and examine whether the SMS is related to broader quality of care measures.

The study used the positive deviance mixed methods approach, which started with identifying PCPs whose patients were gaining in their ability to self-manage (as measured by increased PAM scores), and explored the strategies that these positive deviant PCPs utilized to support patient behavior change. The findings in this paper validate that the strategies identified through qualitative interviews— emphasizing patient ownership of their health; partnering with patients to create goals, strategies, and to problem solve; identifying small steps for change; having frequent follow-up to cheer successes and problem solve challenges; and showing patients care and concern–together are related to patient behavior change. The final step of the positive deviance approach, as outlined by Bradley and colleagues, is to train PCPs in these strategies.[27] Future research should train PCPs in these strategies and assess the extent to which there are improvements in patient outcomes.

In conclusion, this study develops and tests a promising measure of clinician strategies that support patient self-management. It highlights the variation across clinicians in the strategies used to support patients with chronic conditions, underscoring the need to help clinicians low on this measure learn skills in this area and apply them in their practice. This may be an important avenue for improving quality and reducing variation in quality.

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Conflict of interest disclosure statement

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